
4D.4 SOCIAL SYSTEMS

4D.4.1 Socio-Cultural Characteristics

4D.4.1.1 Alternative D – CPAI Development Plan Impacts on Socio-Cultural Characteristics

Socio-cultural impacts under Alternative D – CPAI Development Plan would generally be similar to those under Alternative A – CPAI Development Plan with the following differences.

Under Alternative D roads have been eliminated and replaced with airstrips or helipads at pad and processing facility locations. These changes in infrastructure would likely change the nature but not necessarily the extent of impacts to subsistence harvest activities in the Plan Area. However, to the extent that these changes do result in increased impacts to subsistence harvest, indirect impacts to community health and welfare could also result.

4D.4.1.2 Alternative D – Full-Field Development Plan Impacts on Socio-Cultural Characteristics

Socio-cultural impacts under Alternative D – Full-Field Development are expected to be the same as those under Alternative A – Full-Field Development with the following differences.

Under Alternative D roads have been eliminated and replaced with airstrips or helipads at pad and processing facility locations. These changes in infrastructure would likely change the nature but could not necessarily change the extent of impacts to subsistence harvest activities in the Plan Area. However, to the extent that these changes do result in increased impacts to subsistence harvest, indirect impacts to community health and welfare could also result.

4D.4.1.3 Alternative D – Summary of Impacts (CPAI and FFD) on Socio-Cultural Characteristics

Impacts to socio-cultural characteristics under Alternative D – CPAI Development Plan and Alternative D FFD are generally expected to be the same as those under Alternative A – CPAI Development Plan and Alternative A FFD. Exceptions under Alternative D are changes in impacts related to subsistence harvest that could result from the general elimination of roads in the Plan Area.

4D.4.1.4 Alternative D – Potential Mitigation Measures (CPAI and FFD) for Socio-Cultural Characteristics

Potential mitigation measures would be the same as those identified for Alternative A (Section 4A.4.1).

4D.4.2 Regional Economy

4D.4.2.1 Alternative D – CPAI Development Plan Impacts on Regional Economy

There is no information to lead to the assumption that overall oil production for CPAI Development Plan Alternative D would vary materially from the estimates given in Section 4A.4.2, for Alternative A. Because the economic impacts are directly related to oil production, the economic impacts of Alternative D would be similar to those determined for Alternative A.

The substantial reduction in the use of roads and substitution of airstrips would reduce the amount and associated costs of road construction. This reduction would be offset by increased costs for airstrip construction. To the extent that local residents are employed as equipment operators during construction, some reduction in employment opportunities could occur. However, the potential reduction in construction costs and associated employment is expected to be small.

4D.4.2.2 Alternative D – Full-Field Development Plan Impacts on Regional Economy

There is no information to lead to the assumption that overall oil production for Alternative D FFD would vary materially from the estimates given in Section 4A.4.2, for Alternative A. Because the economic impacts are directly related to oil production, the economic impacts for Alternative D FFD would be similar to those determined for Alternative A FFD.

4D.4.2.3 Alternative D – Summary of Impacts (CPAI and FFD) on Regional Economy

Overall economic impacts of Alternative D would be the same as those determined for Alternative A.

4D.4.2.4 Alternative D – Potential Mitigation Measures (CPAI and FFD) for Regional Economy

Potential mitigation is the same as that proposed for Alternative A and Alternative A FFD. See Section 4A.4.2.

4D.4.3 Subsistence

4D.4.3.1 Alternative D – CPAI Development Plan Impacts on Subsistence

Construction Period

Pipeline lengths would be shorter because of more direct routing of pipelines. Production pad CD-6 and its associated airstrip or helipad and pipeline would be within the stipulated 3-mile sensitive area along Fish Creek as in Alternative A, with effects similar to those for Alternative A. Each pad would have an airstrip or helipad, which would potentially increase air traffic during the construction phase, possibly deflecting caribou, wolves, and wolverines (see Section 4D.3.4.). Ice roads used during construction would also likely deflect caribou, wolves, and wolverines during high-traffic periods, as noted in Section 4D.3.4; however, these high-traffic periods could be short in duration during the construction period. Alternative D proposes the annual construction of an ice bridge across the Nigliq Channel. Ice roads and bridges could also impound water and segment fish and waterfowl habitats in the event of delayed meltdown, changing the distribution and availability of some waterfowl and fish species for subsistence uses (see Section 4D.3.3).

Construction period activities would deflect subsistence uses away from construction areas. Caribou, wolf, and wolverine would be deflected away from areas of land, air traffic, and construction noise (see Section 4D.3.4). The HDD pipeline crossing of the Nigliq Channel would likely have less direct impact on fish during construction than the bridge proposed in Alternative A (see Section 4D.3.2). Subsistence resource users would avoid activity areas during the construction phase for safety reasons, but could use the ice road system to gain access to subsistence use areas.

Effects on subsistence uses in the area would be increased by the following: the annual ice bridge over the Nigliq Channel, which could alter availability of waterfowl nesting habitat through late melt-out and changes in water flows; cross tundra travel, which could disturb or deflect subsistence resources; and the increase in air traffic, which would deflect resources. Effects from construction are expected to last 5 years and are expected to be primarily local in extent.

Construction would affect availability of key subsistence resources because of wildlife disturbance and would occur in seasonal and general use areas for key subsistence resources that are used for more than one season each year, have been used for multiple generations, and are used for multiple resources each year. Effects from construction would occur in key geographic areas relative to other areas of subsistence availability and would affect individual subsistence users, groups of users, and the overall pattern of community subsistence uses. Access to key subsistence use areas could be affected because of hunter perception of regulatory barriers as well as safety concerns. Competition for subsistence resources between communities could increase temporarily as hunters move from traditional subsistence use areas to avoid industrial activity.

Operation Period

Direct effects to subsistence resource availability during operation of the facility would be similar to those described for Alternative A, with the differences described below. The lack of roads connecting the pads would decrease traffic-induced deflection of caribou, wolf, and wolverine during winter and would reduce waterfowl and caribou disturbance during the spring and summer. However, the likely increase in cross-tundra travel would deflect subsistence resources in the summer (Section 4D.3.3). Furthermore, in the area of the pads, disturbance to waterfowl, caribou, wolf, and wolverine would increase because of the increase in air traffic, consisting of either fixed or rotary wing aircraft (see Section 4D.3.3 and Section 4D.3.4). In winter, periodic construction of ice roads to the pads would have localized effects on caribou, wolf, and wolverine during the construction, operation, and high-traffic periods (see Section 4D.3.4). An increase of the pipeline height to a minimum of 7 feet under Alternative D would result in less deflection of caribou and increased access for subsistence users than from 5-foot pipelines.

During operations, depending on aircraft flight elevations, Alternative D would have fewer direct effects on subsistence resource availability than would Alternative A, except near the proposed production pads, where increased air traffic could deflect subsistence resources, and periodically along ice roads constructed to link the pads. The potential for increased cross-tundra traffic, especially to the extent that it occurs in summer, would limit the potential benefits of removing the all-weather roads and road vehicle traffic. The road connecting CD-4 to the runway with its associated fill of shallow lakes and surface depressions and the proposed construction of the Sakoonang Channel bridge could cause disturbance to local fish habitat and reduce availability in that area (Section 4D.3.2). The location of CD-6 and its associated airstrip and pipeline within the Fish and Judy creeks sensitive area could deter subsistence users from summer caribou harvests in the area; however, access to this important subsistence use area would not be reduced during the summer. Winter subsistence access could be enhanced by the periodic presence of ice roads, potentially expanding the subsistence range of Nuiqsut subsistence resource users; however, periods of high traffic on the ice roads could reduce subsistence resource availability in the area of the roads.

4D.4.3.2 Alternative D – Full Field Development Plan Impacts on Subsistence

Impacts caused by the FFD scenario are analyzed in a more general way than those for the CPAI Development Plan because of the hypothetical nature of the scenario. For assessment of impacts to subsistence from the FFD scenario, the Plan Area is divided into groups: the Colville River Delta Facility Group, Fish-Judy Creeks Facility Group, and the Kalikpik-Kogru Rivers Facility Group. The Alternative B FFD scenario is discussed in Section 2.4.2 and Figure 2.4.2.2-1. Further study of subsistence resource availability would be necessary for a complete analysis of the FFD scenarios.

Colville River Delta Facility Group

Under Alternative D, the effects of FFD in the Colville River Delta Facility Group would be the same as under Alternative A during both construction and operation, with the exception of the reduced effects to subsistence by reducing the amount of roads between pads and by raising pipeline minimum height to 7 feet, and the increased local effects near production pads because of the increase in air traffic and the impact between pads of cross tundra travel. Air traffic increases in this area would likely disturb or deflect seals, caribou, wolf, wolverine, and waterfowl in this group.

Fish-Judy Creeks Facility Group

The effects Alternative D FFD in this group would be similar to those of Alternative A, with the same exceptions as noted above for the Colville River Delta Facility Group. Hypothetical CD-8 and CD-10 production pads are close to important subsistence harvest camps on the Fish and Judy Creeks, and Tingmeachsiovik River. Construction and operation at these production pads would deflect subsistence resources and users be

cause of disturbance of the subsistence resources, subsistence user perceptions of regulatory barriers, and reluctance to shoot firearms in the vicinity of industrial facilities for safety reasons.

Kalikpik-Kogru Rivers Facility Group

Impacts of development in the Kalikpik-Kogru Rivers Facility Group would be similar to those listed for the Alternative A FFD, with the same exceptions as noted above for the Colville River Delta Facility Group.

4D.4.3.3 Alternative D – Summary of Impacts (CPAI and FFD) on Subsistence

Effects from construction and operation for Alternative D and Alternative D FFD are expected to continue for the life of the development and are expected to be primarily local in extent for Alternative D and regional in extent for the Alternative D FFD. Construction and operation would affect availability of key subsistence resources because of deflection or displacement of these resources from customary harvest locations. During operation, aircraft traffic, depending on frequency and flight elevation, would be the primary influence on resource availability. Access to subsistence resources would be affected by pipelines, especially in winter because of snowdrifts (mitigated by 7-foot pipelines that allow for less obstruction to terrestrial mammals and subsistence hunters), hunter avoidance of pads and industrial areas, the perception of regulatory barriers, the reluctance to shoot rifles in the vicinity of industrial development, and a preference for animals not habituated to industrial development.

Indirect effects would include hunters going to other areas that would result in harvesting in traditional places less often and increased effort, costs, and risk associated with traveling farther. Alternative D would occur in seasonal and general use areas for key subsistence resources that are used for multiple seasons each year, have been used for multiple generations, and are used for multiple resources each year. Effects from construction and operation would occur in key geographic areas relative to other areas of subsistence availability and would affect individual subsistence users, groups of users, and the overall pattern of Nuiqsut subsistence uses. Competition for certain resources among Nuiqsut, Anaktuvuk Pass, Barrow, and Atkasuk would increase as Nuiqsut hunters avoid traditional subsistence use areas closer to Nuiqsut and travel to farther outlying areas.

4D.4.3.4 Alternative D – Potential Mitigation Measures (CPAI and FFD) for Subsistence

Potential mitigation measures would be the same as those identified for Alternative A (Section 4A.4.3.4), deleting only that which would raise the minimum pipeline height to 7 feet.

4D.4.4 Environmental Justice

4D.4.4.1 Introduction

The basis for identifying disproportionate impacts to minority and low-income populations is described in Section 4A.4.4.

4D.4.4.2 Alternative D – Disproportionate Impacts (CPAI and FFD) on Environmental Justice

Disproportionate impacts under Alternative D – CPAI Development Plan and Alternative D – FFD are expected to be the same as those under Alternative A for both cases (see Section 4A.4.4 on Disproportionate Impacts). The absence of roads between facilities incorporated in Alternative D could reduce access and the potential for impacts to subsistence harvest in Nuiqsut traditional use areas. However, increased use of aircraft to serve these facilities could have some limited offsetting noise impacts.

4D.4.4.3 Alternative D – Potential Mitigation Measures (CPAI and FFD) for Environmental Justice

Potential mitigation measures to reduce or avoid disproportionate impacts would be the same as those identified and discussed for Alternative A (Section 4A.4.4).

4D.4.5 Cultural Resources

4D.4.5.1 Alternative D – CPAI Development Plan Impacts on Cultural Resources

Despite the elimination of roads, addition of airstrips or helipads, and the increased size of the production pad footprint, development under this alternative would have approximately the same impacts as Alternative A. No additional documented cultural resources are in the immediate vicinity of the proposed operational facilities, roads, or pipelines. Section 106 consultation should assure that Alternative D would have no direct effect and negligible indirect effect on known cultural resources during construction and operation. The substantially reduced need for gravel, particularly under the helipad option (D-2) of this alternative, would reduce the risk of impacts to unknown cultural resources below that of any other alternative.

4D.4.5.2 Alternative D – FFD Impacts on Cultural Resources

This alternative would have approximately the same impacts as Alternative A to known cultural resources. Because substantially less gravel would be used in this alternative, the risk to cultural resources from gravel extraction would be reduced.

4D.4.5.3 Alternative D – Summary of Impacts (CPAI and FFD) on Cultural Resources

Impacts resulting from implementation of Alternative D are similar to those of Alternative A. Those cultural resource sites that could be affected along with the impacts to those resources under Alternative D are the same as Alternative A. Any project facility or pad within 1/4 mile of a cultural resource could result in direct effects including damage to or destruction of the resource during construction of the proposed pad.

The integrity of subsurface, surface, and aboveground cultural resources could be significantly affected by construction activities. Unknown or undocumented cultural resources could be situated in the proposed ROWs or footprints of Alternative D and FFD components. If cultural resources were discovered as a result of construction, development, or operation, activities under the proposed CPAI plan, activity would be stopped until the SHPO is consulted and an evaluation of the resource can be carried out.

4D.4.5.4 Alternative D – Potential Mitigation Measures (CPAI and FFD) for Cultural Resources

Potential mitigation measures would be the same as those identified for Alternative A (Section 4A.4.5).

4D.4.6 Land Uses and Coastal Management

4D.4.6.1 Alternative D – CPAI Development Plan Impacts on Land Uses and Coastal Management

Land Ownership and Uses

Development of the CPAI's proposed plan under Alternative D and the two variants, Sub-Alternates D1 and D2, would affect the same landowners as described in Alternative A. Implementation of these developments would not change ownership status on lands within the ASDP Area but would happen under negotiated leases. In addition, Kuukpik Corporation is still able to select lands, and those lands would likely be within the oil reserves. As previously stated, those lands selected are under BLM jurisdiction until patented.

The proposed development of oil production satellites and related facilities under Alternative D would result in less total area developed within the Plan Area compared to in Alternative A. The ASDP under Sub-Alternative D1 calls for development of approximately 170 acres in addition to the previously developed areas within the Plan Area, including production pads, roads, and airstrips. This would result in a 165 percent increase in the total number of acres currently developed for oil production activities within the Plan Area.

Alternative D would provide less access to remote satellites west of Nigliq Channel than any of the other alternatives. No gravel road access would be provided to new satellite facilities; access to all remote sites would be limited to air, ice road, or low ground pressure vehicles. Although this alternative has the most severe limitations on access to remote areas, activities in these areas would still increase from current levels because of satellite facility operations. Effects to subsistence and recreation from these increased activity levels are discussed further in Sections 4D.4.3 and 4D.4.7. Other permitted uses within the ASDP Area, such as scientific studies, communications and navigation-related uses, and overland resupply transport between villages, are not expected to be affected by the proposed development.

Alternative D would be in close conformance with the BLM stipulations for the NPR-A in terms of restricting roads from water-body setback areas. There would be less total area developed, which would minimize gravel extraction operations. Development under Alternative D would, however, include CD-6 within the Fish Creek buffer area. There could be more flight activity during operations under Alternative D because of the reduced road access. However, disturbance by aircraft could be minimized by flying aircraft away from Fish Creek during fishing season to the extent possible.

Coastal Zone Management

Development proposed under Alternative D includes construction and operation of five satellite production pads, as well as pipelines and airstrips. Although many of these facilities are proposed to be on federal lands that are not considered to be within the coastal zone, CPAI also proposes development in the Colville River Delta, which is considered to be within the coastal zone.

Alaska Coastal Management Program

The coastal standards are evaluated for Alternative D below.

Coastal Development (6 AAC 80.040)

As discussed under Alternative A, there is no feasible inland alternative to development of the existing oil resources within the ASDP Area. The proposed facilities have incorporated design measures to minimize potential effects on coastal resources, and in Alternative D, access to remote sites is limited to air. No road access across the Nigliq Channel is proposed. Stipulations on development within the NPR-A require continued access to the coastal resources used for subsistence and for transport of supplies for the local village; therefore, development of these facilities would not be expected to displace other important coastal uses. Development of CD-6 within the Fish Creek buffer area would require an exemption from the BLM stipulations for this area. Development under this alternative would comply with the coastal standard more closely than would Alternative A.

Geophysical Hazard Areas (6 AAC 80.050)

Geophysical hazards would be addressed for Alternative D through design and siting of facilities to maintain the permafrost and natural drainage patterns and to protect the built structures from flood events, scour, ice jams, and storm surges. The reduction of access road infrastructure under this alternative would reduce the effect of geophysical hazards.

Recreation (6 AAC 80.060)

Under Alternative D, development is consistent with the criteria in the energy standard for maximum consolidation of facilities and minimization of the potential for adverse effects to environmental resources. The reduction of road access to remote satellites is expected to reduce environmental effects on sensitive habitats. However, this alternative locates CD-6 within the Fish Creek buffer area and would likely result in increased

aircraft activity to transport personnel to the satellite facilities. Overall, this Alternative D would be expected to have lower potential for adverse effects on coastal resources than would Alternative A.

Energy Facilities (6 AAC 80.070)

Under Alternative D, development would be consistent with the criteria in the energy standard for maximum consolidation of facilities and minimization of the potential for adverse effects on environmental resources. The reduction of road access to remote satellites would be expected to reduce environmental effects on sensitive habitats. However, this alternative locates CD-6 within the Fish Creek buffer area and would likely result in increased aircraft activity to transport personnel to the satellite facilities. Overall, Alternative D would be expected to have lower potential for adverse effects on coastal resources than would Alternative A.

Transportation and Utilities (6 AAC 80.080)

The development proposed under Alternative D substantially reduces roadways compared to all other alternatives. Access to all satellite developments would be limited to air, ice road or low ground pressure vehicles. No new gravel road access would be provided to link satellite facilities west of the Nigliq Channel with the existing Alpine facilities to the east or with Nuiqsut. Alternative D conforms to this standard by reducing construction of new roads along shorelines and coastal areas.

Mining and Mineral Processing (6 AAC 80.110)

Sub-Alternative D1 would require development of approximately 170 acres of gravel pad. Sub-Alternative D2 would require development of approximately 70 acres of gravel pad. The reduction of road access under this alternative would reduce the amount of gravel needed and minimize potential environmental effects associated with gravel mining. Gravel sources for this alternative would be the same as those discussed under Alternative A.

Subsistence (6 AAC 80.120)

The Alternative D plan would not provide road access to remote satellite developments or create new access to subsistence hunting and fishing sites. However, operation of the remote facilities without roads could result in a higher level of aircraft activity in these areas, which could affect subsistence resources. The potential for adverse effects on subsistence from the proposed development are discussed in more detail in Section 4D.4.3.

Habitats (6 AAC 80.130)

Development under Alternative D would minimize the extent of disturbance to sensitive habitats through a reduced development footprint and limitation of access to remote sites.

Air, Land, and Water Quality (6 AAC 80.140)

Development under Alternative D would require the same permits and reviews discussed under Alternative A. Compliance with the ADEC and USEPA regulations would ensure conformance with this coastal management standard for the proposed CPAI Development Plan scenario.

Historic, Prehistoric, and Archaeological Resources (6 AAC 80.150)

Development under Alternative D would require the same process for protection of cultural resources as discussed under Alternative A. The reduced access under Alternative D would be likely to reduce the potential for inadvertent impacts to previously undocumented cultural resources.

North Slope Borough Coastal Management Program

Development under Alternative D is consistent with the NSB Standards for Development (NSB CMP 2.4.3) through compliance with the BLM stipulations and the coastal management standards addressed above. Potential effects on subsistence and cultural resources would be expected to be lower than for other alternatives because of the decreased access to the remote satellite areas under Alternative D.

Alternative D development would comply with the NSB's Required Features for Applicable Development (NSB CMP 2.4.4) through compliance with the BLM stipulations, including the restrictions on vehicle and aircraft activities during certain time periods in areas where wildlife species are sensitive to noise and movement. Alternative D would result in substantially less vehicle traffic throughout the ASDP Area but would result in increased aircraft activity to transport personnel to the remote satellites.

Development of CPAI's proposed plan under Alternative D would address NSB Best Effort Policies (NSB CMP 2.4.5). These policies call for protection of sensitive coastal resources, including subsistence and cultural resources. These issues have been addressed above in the ACMP discussion. The more restricted access to the remote satellites under Alternative D is expected to reduce potential effects.

The NSB CMP also contains standards for Minimization of Negative Impacts (NSB CMP 2.4.6). The proposed development under Alternative D includes design measures to protect permafrost and to address geophysical hazards as discussed above under the ACMP. Roadways and other facilities would be removed from waterbody setback areas and reduced through increased use of air transportation. Proposed development under Alternative D would be expected to be consistent with these NSB standards.

North Slope Borough Land Management Regulations

As discussed under Alternative A, most of the land within the NSB is zoned as Conservation, with the exception of some village sites and the existing oilfields at Prudhoe Bay and Alpine. The NSB's Resource Development zoning classification covers areas designated for oil development activities. Development east of the NPR-A in the Colville River Delta under Alternative D would require a rezoning of the development areas to the Resource Development classification.

4D.4.6.2 Alternative D –FFD Impacts on Land Uses and Coastal Management

Land Ownership and Uses

The Alternative D FFD scenario would affect the same landowners as described in FFD Alternative A. Implementation of these developments would not change ownership status on lands within the ASDP Area, but would occur under negotiated leases. In addition, Kuukpik Corporation is still able to select lands and those lands would likely be within the oil reserves. As previously stated, those lands selected are under BLM jurisdiction until patented.

FFD under Sub-Alternative D1 would result in development occurring throughout the ASDP Area, with an additional 22 production pads and associated pipelines and airstrips totaling approximately 990 acres. FFD under Sub-Alternative D2 would develop approximately 470 acres. The FFD scenario would result in a substantial increase in the area developed within the Colville River Delta, the Fish-Judy Creeks, and the Kalikpik-Kogru Rivers facility groups. Alternative D would propose construction of airstrips at each satellite facility with access limited to aircraft. Although there would be increased activity levels in these areas because of operation of the facilities, the activity level would be lower than that for any other alternative. Effects of FFD on subsistence resources and recreation are discussed in Sections 4D.4.3 and 4D.4.7.

Alternative D FFD would more closely conform to the BLM stipulations for the NPR-A in that roads and bridges would not be built in sensitive habitats. Again, flight activity could increase for this scenario as compared with the other alternatives because of the increased number of satellite facilities accessible only by air.

Coastal Zone Management

Alternative D FFD proposes an additional 22 production pads, as well as airstrips, pipelines, and two new processing facilities. Again, most of these facilities are proposed on federal lands within the NPR-A; however, additional development would also occur on lands outside the NPR-A within the coastal zone. Because development on federal lands must comply with coastal programs to the extent possible, this section evaluates all of the proposed development against the state and local district coastal zone standards, regardless of whether the development occurs on federal lands.

Alaska Coastal Management Program

The coastal standards are evaluated for Alternative D below.

Coastal Development (6 AAC 80.040)

Alternative D FFD differs from Alternative A in the elimination of all access roads associated with the remote production satellites. Alternative D FFD would conform more to the coastal standard than would Alternative A.

Geophysical Hazard Areas (6 AAC 80.050)

Geophysical hazards would be addressed for the FFD scenario through design and siting of facilities to maintain the permafrost and natural drainage patterns and to protect the built structures from flood events, scour, ice jams, and storm surges. The reduction of access road infrastructure under this alternative would reduce the effect of geophysical hazards.

Recreation (6 AAC 80.060)

Development of facilities under FFD would be required to comply with the same stipulations on continued access for subsistence and recreation activities within the NPR-A. Again, this alternative does not develop new road access; therefore, no adverse effects on recreation are anticipated.

Energy Facilities (6 AAC 80.070)

Alternative D FFD would reduce road access to remote satellites but would result in increased aircraft activity to access remote sites. This alternative would locate satellite facilities in the Fish Creek buffer area and in a restricted area near the Kogru River. Overall, this alternative would be expected to result in a lower potential for environmental impacts by substantially reducing road construction and access throughout the ASDP Area.

Transportation and Utilities (6 AAC 80.080)

The FFD scenario under Alternative D requires air access for all satellite development. This alternative maximizes conformance with the transportation standard.

Mining and Mineral Processing (6 AAC 80.110)

Alternative D FFD would require less gravel than FFD under any other alternative. Development of the full-field scenario would still likely require resources beyond those currently identified. Any new gravel mining operation within the coastal zone would be required to receive a permit, which would ensure compliance with state coastal management standards and protection of coastal resources.

Subsistence (6 AAC 80.120)

Development of FFD with only air access to the satellite facilities would result in increased aircraft activity associated with operation of the remote satellites. However, no new road access would be created to remote areas currently used for subsistence. Potential effects on subsistence from FFD are discussed further in Section 4D.4.3. Overall, Alternative D FFD would be expected to have less adverse effect on subsistence than other alternatives.

Habitats (6 AAC 80.130)

Alternative D FFD would minimize the extent of disturbance to sensitive habitats through a reduced development footprint and limitation of access to remote sites.

Air, Land, and Water Quality (6 AAC 80.140)

The Alternative D FFD scenarios would require the same permits and reviews discussed under Alternative A. Compliance with ADEC and USEPA regulations would ensure conformance with this coastal management standard for the proposed FFD scenario.

Historic, Prehistoric, and Archaeological Resources (6 AAC 80.150)

Alternative D FFD would require the same process for protection of cultural resources as discussed under Alternative A. The reduced access under this alternative would be likely to reduce the potential for inadvertent impacts to previously undocumented cultural resources.

North Slope Borough Coastal Management Program

Alternative D FFD is consistent with the NSB Standards for Development (NSB CMP 2.4.3) through compliance with the BLM stipulations and the coastal management standards addressed earlier. Potential effects on subsistence and cultural resources would be expected to be lower than for other alternatives because of the decreased access to the remote satellite areas under Alternative D FFD.

Alternative D FFD would comply with the NSB's Required Features for Applicable Development (NSB CMP 2.4.4) through compliance with the BLM stipulations, including the restrictions on vehicle and aircraft activities during certain time periods in areas where wildlife species are sensitive to noise and movement. Alternative D FFD would result in substantially less vehicle traffic throughout the ASDP Area but would result in increased aircraft activity to transport personnel to the remote satellites.

Alternative D FFD would address NSB Best Effort Policies (NSB CMP 2.4.5). These policies call for protection of sensitive coastal resources including subsistence and cultural resources. These issues have been addressed above in the ACMP discussion. Alternative D FFD would be expected to reduce potential effects by more restricted access to the remote satellites.

The NSB CMP also contains standards for Minimization of Negative Impacts (NSB CMP 2.4.6). The proposed development under Alternative D for both the ASDP and the full-field alternatives includes design measures to protect permafrost and to address geophysical hazards as discussed above under the ACMP. Roadways and other facilities would be removed from water-body setback areas and reduced through increased use of air transportation. The proposed FFD scenario under Alternative D is expected to be consistent with these NSB standards.

North Slope Borough Land Management Regulations

As discussed under Alternative A FFD, most of the land within the NSB is zoned as Conservation, with the exception of some village sites and the existing oilfields at Prudhoe Bay and Alpine. The NSB's Resource

Development zoning classification covers areas designated for oil development activities. Development east of the NPR-A in the Colville River Delta under Alternative D FFD would require a rezoning of the development areas to the Resource Development classification.

4D.4.6.3 Alternative D – Summary of Impacts (CPAI and FFD) on Land Uses and Coastal Management

Construction and operation of the CPAI Development Plan Alternative D would not be anticipated to result in adverse effects on existing land use and ownership. Although there would be an increase in the overall disturbed area, the increase for Alternative D would be less than that of other alternatives. Alternative D would be in close conformance with the BLM stipulations for the NPR-A in terms of restricting roads from water-body setback areas. Development under Alternative D would, however, include CD-6 within the Fish Creek buffer area. Approval for minimal development within Fish Creek buffer area would be necessary for CPAI to implement the proposed plan. Full-field development of a production pad and associated pipeline in the area near the Kogru River designated for no surface activities would require an exemption from the surface use restrictions for this area. It also would require approval for additional development within the Fish Creek buffer area, Sensitive Consultation areas, and the special caribou stipulation area.

Coastal and land management impacts from implementation of Alternative D are not anticipated to have adverse effects. Under the NSB Land Management Regulations, however, the rezoning of land under the NSB from Conservation to Resource Development would be required for implementation of CPAI's proposed plan.

4D.4.6.4 Alternative D – Potential Mitigation Measures (CPAI and FFD) for Land Uses and Coastal Management

No mitigation measures have been identified for Alternative or Alternative D FFD.

4D.4.7 Recreation Resources

4D.4.7.1 Alternative D – CPAI Impacts on Recreation Resources

Increased air traffic under Alternative D-1, or more prolonged helicopter traffic under Alternative D-2, is the primary distinctions between this alternative and Alternative A. This traffic could affect the experience, including the solitude, quietude, naturalness, and wilderness of the infrequent recreational visitors to the area. As with Alternative A, the CPAI proposal to develop five pads could potentially affect the recreational experience over approximately 40,000 acres near the pads. However, the recreational use of the Plan Area is very low, and most recreation occurs directly along the Colville River corridor where activities associated with Nuiqsut already have decreased some of these recreation values. The recreational opportunities in the Plan Area would remain consistent with the BLM's SPM classification.

4D.4.7.2 Alternative D – FFD Impacts on Recreation Resources

Under the FFD alternative, the types of effects on hunting, fishing, and birding opportunities and the qualities of solitude, quietude, naturalness, and wilderness would be the same as those described for the CPAI Development Plan. However, the potential for such effects would increase under FFD as a result of the increased geographic scope of development. In addition to the potential effects on approximately 40,000 acres from the applicant's proposed plan, as with Alternative A, the recreational opportunities on up to 192,000 acres could be affected if as many as 24 proposed processing or production pads were developed. In addition, under Alternative D-1 increased air traffic could create short-term noise impacts. However, because recreational use is concentrated south of the likely air routes from Kuparuk and the Alpine facility to new processing and production pads, the actual impacts to recreation could be slight.

4D.4.7.3 Alternative D – Summary of Impacts (CPAI and FFD) on Recreation Resources

Construction and operation of the facilities proposed under Alternative D and Alternative D FFD is not expected to result in more than local or short-term adverse effects to the lightly used recreational resources in the Plan Area.

4D.4.7.4 Alternative D – Potential Mitigation Measures (CPAI and FFD) for Recreation Resources

No mitigation measures have been identified.

4D.4.8 Visual Resources

4D.4.8.1 Alternative D – CPAI Development Plan Impacts on Visual Resources

Construction Period

Construction-related impacts would be approximately the same as those described under Alternative A.

Operation Period

Operation-related impacts would be similar as those described for Alternative A. The reduction in gravel roads would reduce the number of horizontal lines, but this effect on visual contrasts with the natural landscape is negligible because the gravel roads would follow the form of the relatively flat landscape.

4D.4.8.2 Alternative D – FFD Impacts on Visual Resources

Since ice roads would be used more often in this alternative than in others, the ice road alignments would appear as dark green lines during summer, contrasting with characteristic grays, browns, and light green colors of the tundra. Viewers who travel across the tundra would be subjected to views of dark green lines rather than gravel roads under Alternative D. All other impacts to visual resources would be same as those described for Alternative A.

4D.4.8.3 Alternative D – Summary of Impacts (CPAI and FFD) on Visual Resources

Construction and operation impacts of Alternative D would be similar to those described in Alternative A. A decrease in the number of all-weather roads, in combination with an increase in ice roads under this alternative, would have negligible effects on visual contrasts with the natural landscape. Impacts to visual resources resulting from pads and operational facilities are the same as those described in Alternative A.

4D.4.8.4 Alternative D – Potential Mitigation Measures (CPAI and FFD) for Visual Resources

Potential mitigation measures would be the same as those identified for Alternative A (Section A.4.8).

4D.4.9 Transportation

4D.4.9.1 Alternative D – CPAI Development Plan Impacts on Transportation

Roadways

Alternative D would result in the construction of five new airstrips or five helipads and 34.6 miles of pipelines. This alternative eliminates roads between pads and relies instead on air access.

Construction Period

Construction activities, phasing, and workforce under Alternative D would be the same as under Alternative A. No adverse effects on any public roadways from transport of construction personnel are anticipated.

Operation Period

Of all action alternatives, Alternative D would result in the lowest level of vehicular traffic within the Plan Area. Transport of bulk operating supplies and materials to the production pads would only be possible during winter, resulting in a need to construct larger storage facilities at the production pads. High-value, low-weight supplies, or other essential supplies that cannot wait until winter, could be shipped in by air. Personnel access to the sites would be by air every 3 days.

Railroad Transportation

Demand for rail transport of supplies and materials for construction and operation and the overall effects on the existing rail system under Alternative D are the same as under Alternative A.

Marine Facilities

Marine transportation needs for construction would be the same under Alternative D as under Alternative A. Transport of supplies during normal operations does not typically involve marine transport.

Aviation Facilities

Transport of the construction workforce to the North Slope would be the same under Alternative D as under Alternative A. Construction operations for Alternative D would result in more aircraft flights during construction than for Alternative A, particularly during summer work on production pads. It is expected that Shared Services Aviation would be supplemented with contract air support to provide the additional flights into and within the Plan Area as required during construction.

The demand for aviation support for the production pads under Alternative D would require additional flights to the production pads for normal operations, because no road access would be available. It is estimated that operations personnel would fly from the Alpine facility to these remote sites once every 3 days, averaging 122 flights per year. Shared Services Aviation is expected to be able to accommodate these additional trips with its existing crews and air fleet. These services could be supplemented with contract air support as needed. The increased demand for air support is not expected to adversely affect air transportation resources within the region.

Pipelines

As with the other action alternatives, there would be no effects on existing pipeline facilities during the construction phase. Production flows will likely be managed to remain within the capacity of the existing sales oil pipeline, and the projected increase in throughput to TAPS is expected to remain well within the capacity of the pipeline.

Operation of the proposed facilities under Alternative D would require the same pipeline support as under Alternative A. Effects on the product supply pipeline from the Plan Area to Kuparuk and on TAPS would be the same as under Alternative A.

4D.4.9.2 Alternative D – FFD Impacts on Transportation

Roadways

Construction impacts to roadways outside the Plan Area would be similar to those identified for Alternative A, and transportation needs to new pads in the plan area would not involve roads.

Railroad Transportation

Effects on the existing rail system from development would be similar under Alternative D to those under Alternative A.

Marine Facilities

Construction and operation of the FFD Plan would have the same effects on marine resources under Alternative D as under Alternative A.

Aviation Facilities

Transport of construction personnel from Anchorage or Fairbanks to Deadhorse, Kuparuk, or both, would remain the same as described for the FFD Plan under Alternative A. The FFD Plan under Alternative D would require additional air support during construction and operations, especially for construction of the remote production pads. There could be increased demand for flights from Kuparuk or the Alpine facility to the proposed construction sites throughout the Plan Area, particularly during summer months. Because development of the remote facilities under the FFD Plan is likely to be phased in slowly over time, Shared Services Aviation is believed to be able to accommodate the level of flight operations, and contract aviation support could provide supplemental support as needed. This additional demand is not expected to adversely affect air transportation resources in the region.

Operations under the FFD Plan would require personnel to fly to remote production pads every 3 days. The demand for aviation support for these remote facilities could substantially increase the number of flights required. It is possible that there would be a need for Shared Services Aviation to increase its capacity or to be supplemented with contract aviation support.

Pipelines

Pipeline needs for the FFD Plan are similar under Alternative D to those under Alternative A and should be able to be met with existing infrastructure, supplemented with new pipeline to handle additional phased production.

4D.4.9.3 Alternative D – Summary of Impacts (CPAI and FFD) on Transportation

Construction and operation of the facilities proposed under Alternative D CPAI Development Plan and FFD Plan in the Plan Area are not expected to result in adverse effects to transportation resources. Existing and proposed roads, airstrips, and pipelines are expected to adequately transport personnel, materials, and product throughout the Plan Area and into statewide transportation systems. Both local and statewide transportation systems are considered to have adequate capacity to accommodate the level of activity anticipated during construction and operation of the facilities.

4D.4.9.4 Alternative D – Potential Mitigation Measures (CPAI and FFD) for Transportation

No mitigation measures have been identified.